



Climate change and trace gases

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Abstract:

Palaeoclimate data show that the Earth's climate is remarkably sensitive to global forcings. Positive feedbacks predominate. This allows the entire planet to be whipsawed between climate states. One feedback, the 'albedo flip' property of ice/water, provides a powerful trigger mechanism. A climate forcing that 'flips' the albedo of a sufficient portion of an ice sheet can spark a cataclysm. Inertia of ice sheet and ocean provides only moderate delay to ice sheet disintegration and a burst of added global warming. Recent greenhouse gas (GHG) emissions place the Earth perilously close to dramatic climate change that could run out of our control, with great dangers for humans and other creatures. Carbon dioxide (CO₂) is the largest human-made climate forcing, but other trace constituents are also important. Only intense simultaneous efforts to slow CO₂ emissions and reduce non-CO₂ forcings can keep climate within or near the range of the past million years. The most important of the non-CO₂ forcings is methane (CH₄), as it causes the second largest human-made GHG climate forcing and is the principal cause of increased tropospheric ozone (O₃), which is the third largest GHG forcing. Nitrous oxide (N₂O) should also be a focus of climate mitigation efforts. Black carbon ('black soot') has a high global warming potential (approx. 2000, 500 and 200 for 20, 100 and 500, years, respectively) and deserves greater attention. Some forcings are especially effective at high latitudes, so concerted efforts to reduce their emissions could preserve Arctic ice, while also having major benefits for human health, agricultural productivity and the global environment.

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Resource Description

Exposure : ☒

weather or climate related pathway by which climate change affects health

Unspecified Exposure

Geographic Feature: ☒

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☒

resource focuses on specific location

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Global or Unspecified

Health Co-Benefit/Co-Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

General Health Impact

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type:

format or standard characteristic of resource

Review

Timescale:

time period studied

Time Scale Unspecified